admit of, all the prominent points connected with the vital statistics of Baltimore, up to the present period. We have seen that the mortality has increased, and to what causes this is due. But, let us remark that the tendency in large cities is for the ratio of mortality to increase with the augmentation of the population, and that our present ratio is better than five years since, or than any of the large cities to the north. The advantage we possess over the latter is to be explained by accident of situation, building, &c. But the improvement since 1849, can only be explained by the greater care bestowed on the cleanliness of the streets, and public hygiene generally. To these causes we owe our almost complete exemption from cholera. But still more can be done, and could the community at large only have impressed upon them, through the agency of the medical profession, the importance of proper registration, causes now obscure, but operating most extensively upon the welfare of those around us, might be discovered and remedied. These often escape observation, because we are not aware of the extent of evil influence they produce; nor will they ever be correctly ascertained without statistical investigations. The objection is made, that such investigations must necessarily be imperfect; but I think I have shown that, with the data now attainable, some important conclusions may be drawn, and certainly, with legislative authority, they might be made much better, and, as a consequence, the deductions would be still more reliable than they now are.

I am glad that the Medico-Chirurgical Faculty of Maryland, at their last meeting, appointed a committee to memorialize the Legislature in regard to this matter; and should they fail, I see no reason why it might not be done for our own city. We personally are interested only in the latter, but, for the sake of science and humanity, let us hope that it may be made to include the whole State of Maryland.

BALTIMORE, June 28, 1855.

ART. III.—*Report made to the Medical Society of Alleghany County, Pa., on the Epidemic Cholera which prevailed in Pittsburg during the months of September and October*, 1854. By THOS. J. GALLAHER, M. D., A. M. POLLOCK, M. D., and W. DRAINE, M. D. (Published by order of the Society.)

THE committee appointed to draw up in a condensed form the interesting points connected with the epidemic cholera as it occurred recently in Pittsburg, would respectfully present the following report:—

The summer of 1854 was one of the hottest and dryest ever experienced in this part of the country. The hot weather commenced in June, and continued till the last of September, during which period the thermometer frequently ranged from 98° to 100° in the shade, and from 120° to 140° in the sun.[1] No heavy showers occurred during the whole season until the 12th of September, on the morning of which day a refreshing shower set in, lasting for two hours. In consequence of the long-continued heat and drought, the soil of the country had become dry and parched, and vegetation, in a great measure, destroyed. Provisions in the autumn, of course, rose to such an enormous price that the poor were, in a great measure, unable to procure them, and were compelled to live mostly on salted and dried meats, with bread, and a scanty supply of vegetables. Even the middling classes, from the complete stagnation in business which then existed, were unable to supply themselves with their usual abundance of healthy nutritious food.

These causes operated powerfully in reducing the flesh and in enfeebling many of our citizens. In fact, all suffered more or less from them. When, therefore, the fall came, and with it the cholera, the reduced systems, and debilitated constitutions of our fellow citizens, were little able to resist the operation of the cholera poison.

The summer, while it was hot and dry, was also rather more sickly than usual; but the diseases which prevailed were not different from what we ordinarily see at this season. Diarrhœa, dysentery, and pneumonia formed the principal of these. Towards the end of August, and early in September, an unusual number of persons were afflicted with felons on their fingers, and boils and pustular eruptions on various parts of the body. Cases of pustular eruptions, in particular, were very numerous.

During the first twelve days in September, there was a marked increase in the amount of sickness in the city, and in the number of deaths. Among these last a few cases of cholera were reported; but bilious and serous diarrhœa and dysentery were known to have produced the greatest mortality.

The first appearance of cholera in this locality was early in July. In that month, a lady, who had returned from a western and southern tour, where the disease was then prevailing, took the disease in the borough of Sligo, and, after a few hours, died. In a few days, several members of the family contracted the complaint, and some of them died also. From this time to the sudden and severe outbreak of the disease in the city, an occasional case occurred in Sligo and Birmingham, and a few in the city, in persons who had contracted the disease down the river.

As has already been stated, on the morning of the 12th of September, a copious shower of rain fell; and, on the 13th, the cholera first appeared as an epidemic. It was, therefore, ushered in by a heavy rain, as it had been noticed to do elsewhere. The lower part, comprising the old wards, was the first to suffer. Gradually it spread through the Fifth and Ninth Wards, and made its way up the hill to the Sixth and Seventh. The hilly part was certainly the last attacked by a few days. It appeared, indeed, to rage there with the greatest malignancy, while it was declining in the district below. The very summit of the hill, comprising the district in the neighbourhood of the new basin, and the whole face of the hill next to the Fifth Ward, comparatively escaped; the few cases that did occur having been no doubt contracted in the infected districts. Part of the First and Fourth Wards, forming what is generally called the Point, and that part of the Eighth which lies on the northern slope of Boyd's Hill, were comparatively uninfected. Every other part of the city may be said to have been infected, though in different degrees.

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[1] See appendix to this report.

In the districts where it prevailed to the greatest extent—the narrow streets, lanes, and confined courts, where the houses are small, confined, and badly ventilated—the disease appeared to be the most malignant. Thus, in the Fifth Ward, Mulberry Alley suffered most; in the Third Ward, Webster Street, Cherry Alley, upper part of Virgin Alley, Miltenberger's Alley, with the courts proceeding therefrom, contained the greater number of cases; whilst in the Second Ward, Hardscrabble produced the greater number of deaths.

Perhaps no part of the city, of an equal size and population, had as many deaths within its confines as this last named spot. This place contains, mostly, small frame houses, and is situated at the base of that part of Boyd's Hill which faces the west. Along the western border of this cluster of houses the canal, which is partially filled with all kinds of filth, mineral, vegetable, and animal, and which contains but a small stream of water, runs, forming the outlet of the Pennsylvania Canal. The population is almost entirely foreign, composed mostly of Irish and Welsh, who are either common labourers or are employed in the iron and glass manufactories. The two streets of the district are not paved, and therefore not kept clean. The dirt, which is allowed to collect upon the streets and small by-ways is washed, in a great measure, into the canal by the rain. This summer, however, as there had been but little rain, a greater accumulation of domestic filth took place than usual. No doubt this accumulation, both about the houses of the district and within the canal, which forms the great reservoir for their impurities, was one of the causes which led to the almost universal prevalence of cholera here. It is a singular fact that, whilst the inhabitants of this district, which, as has already been stated, is situated at the base of the *western* declivity of Boyd's Hill, perished in such numbers, those living on the northern and southern declivities of the same hill, whose occupations and nationalities are the same with those in Hardscrabble, suffered but little from the cholera.

When the cholera visited this city in 1849 and '50, it confined its ravages mostly to the German and coloured population; in this visitation, however, all classes and nations of people were attacked; but the Irish, especially those who had recently arrived in the country, were the principal sufferers. Unquestionably, many persons of American birth fell victims to the disease, but of these the aged, the intemperate, and the weakly, formed the principal part. The coloured population was comparatively exempt.

It may be worthy of remark that, while from forty to ninety died daily in our city for a period of at least ten days, not more than one or two of these occurred in our principal hotels.

As to the total number of deaths during the recent epidemic, we can give but a near estimate. The number reported to the Board of Health, and published in our newspapers, exceeded eight hundred. There were many deaths, however, unknown both to our Board of Health and to newspaper reporters. One of the members of the committee knew himself of five or six cases which were hurried to the graveyard and buried without any note being taken of them, and whose names never appeared in our newspaper reports. Knowing that there must have been a great many others similarly buried, from the haste it required to inter the great number who fell, we are led to the conviction that, at the lowest estimate, one thousand persons perished in this city from epidemic cholera in the fall of 1854.[1]

When the cholera first made its appearance among us, its attacks were exceedingly malignant; but, in a few days, many of them assumed milder types. Accompanying cholera, and especially when it was on the decline, and had assumed a milder form, we had every variety of bowel affection, such as dysentery, cholera morbus, bilious and serous diarrhœa, &c., all of which were rather difficult to manage.

We have now to detail the most prominent symptoms of cholera as it appeared in this city. For the sake of brevity, we will divide the disease into three periods, viz: 1st. The period of accession; 2d. That of collapse; 3d. That of reaction.

1. In the period of *accession*, in many cases the patient complained of debility, uneasiness in the bowels, and slight headache, previous to the occurrence of diarrhœa. In the majority of cases, however, no premonitory symptoms ushered in the attack, diarrhœa being the first noticeable symptom. The alvine evacuations, which recurred every fifteen or thirty minutes, or more or less frequently, according to the violence of the attack, were copious, painless, and thin; at first, mostly of a bilious or feculent character, but, as the disease progressed, they became albuminous and thinner than at first, and of a whitish colour, resembling rice-water or fine soapsuds. Occasionally, they were transparent, or of a slight brownish hue, as though a few drops of tincture of kino had been mingled with them. These evacuations were occasionally squirted from the anus with considerable force, but they mostly came

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[1] According to the record of the Board of Health, the number of deaths which occurred in this city from April 1, 1853, to April 1, 1854, was 865, whilst the number which occurred from April 1, 1854, to April 1, 1855, including the period in which epidemic cholera prevailed, was 1,936, making the total number of deaths the present year, ending April 1st, exceed that of the preceding by 1,171.

away without any effort on the part of the patient, the desire to evacuate the rectum being sudden and irresistible. These discharges were very exhausting to the patient, and reduced his flesh so rapidly that his body became thin, and his features contracted and pointed in a few hours. After the diarrhœa had continued for a longer or shorter period, vomiting ensued, the evacuations being, in many cases, like those passed by the bowels. Most frequently, however, the discharges from the stomach consisted of glairy mucus, or of the medicines and drinks which the patient had been taking. Occasionally, the irritability of the stomach was so great that everything received into it was immediately ejected with considerable force.

Early in the progress of the complaint, spasmodic contraction of the muscles ensued, which generally commenced in the lower extremities, and extended thence to the abdomen and upper parts of the body. These spasms were clonic in their character, frequent, and exceedingly painful. There were generally present, also, great thirst, uneasiness in the epigastric region, feebleness and slight increase of frequency in the pulse, coldness and moisture of the skin, partial or complete suppression of the urine, and stupidity, though great clearness of the intellectual faculties.

The above sketch is a brief and rough outline of the first stage of cholera, as it occurred, perhaps, in the greater number of cases, but variations from this description were very numerous. In very many cases witnessed by us, there was neither vomiting nor cramps, the patient apparently sinking into collapse from the exhausting diarrhœa. It was observed, too, that these cases, which were free from spasms, were the most severe, and likely to have the most speedily fatal termination. In every case of cholera, without a single exception, so far as our experience goes, diarrhœa was present, and formed one of the earliest and most prominent symptoms. We have seen a few cases in which from one to three evacuations only were passed, but we saw none in which diarrhœa was entirely absent.

Under the combined effects of diarrhœa and the other symptoms described, the patient rapidly lost strength and flesh, and, in the course of from two to twenty-four hours, was precipitated into the second, or collapsed stage of cholera.

2. In the *collapse* of cholera, there were great emaciation and loss of strength; a blueness and contraction of the whole body, and especially of the face; sunken eyes; a peculiar dryness and huskiness of the voice; feebleness, smallness, and finally entire cessation of the pulse at the wrist; a coldness of the skin, tongue, and breath; and suppression of the urine. The thirst became very intense, and the skin covered with a copious, cold, clammy perspiration. The patient was stupid and dull, and averse to all exertion, mental and physical, but, when aroused, would answer questions rationally, give proper directions about things which interested him, and appeared perfectly rational. The diarrhœa and cramps would greatly harass him, but, in the interval of these, he would be perfectly easy. Towards the termination of

the period of collapse the stupidity increased, whilst the diarrhœa and cramps diminished, and finally ceased, allowing the patient to pass the few last hours of his existence in a kind of pleasant and tranquil stupidity. The case generally terminated fatally in the cold stage without any evidences whatever of reaction. A short time before death the patient sometimes became delirious, though most generally he remained perfectly rational to the last. When the case did not terminate fatally, but exhibited evidences of improvement, then the patient gradually passed into the period of reaction, which we will now consider.

3. In passing into the *reactive* period, the pulse gradually returned, and became fuller and stronger; the skin lost its pallor and blueness, and gradually became warm and red; the secretions of bile and urine returned; the vomiting and diarrhœa ceased; the huskiness of the voice diminished; the spasms disappeared; and, in a short time, a return of appetite and inclinations indicated an approach to the restoration of health. In such a case, where no inflammatory symptoms supervened, the patient would likely recover his usual health in the course of a few days. Occasionally, however, the most favourable case would relapse into collapse, and die in a short time. When this unfavourable result did occur, it was found mostly owing to some indiscretion in diet, or to too early rising from the bed. It not unfrequently happened that a patient, after reaction had taken place, instead of rapidly recovering, passed into a state of low fever, resembling the typhoid, marked by hot skin, frequent and feeble pulse, coated tongue, great prostration of strength, &c., which ran on for several weeks, and sometimes terminated fatally. In this period, other complications frequently arose, which greatly retarded the restoration of the patient's health, or entirely destroyed his hopes of recovery. Among these gastric or gastro-enteric inflammation or irritation, and inflammation and congestion of the brain and its membranes, were the most common. Various eruptive affections of the skin, and abscesses of an enormous size, were observed to form during this period, but patients afflicted with these were generally known to get well.

Cases of cholera which terminated fatally did so mostly in from six to thirty-six hours. Some few of exceeding malignancy were said to have terminated in three hours. Quite a number lingered on for several days. When a case was protracted beyond two or three days, a recovery generally ensued. The cold stage was the period in which they generally died. When death took place after reaction had set in, it was mostly in consequence of one or other of the inflammatory complications already spoken of. When death was approaching, a cessation of the pulse at the wrist for twelve or twenty-four hours before life was extinguished was not an uncommon event.

Cases were numerous in which there was no collapse, the disease having been arrested by appropriate remedies previous to the accession of that stage.

Causes.—The predisposing causes were operating during the whole summer preceding the epidemic outbreak, so that by fall, when the atmosphere of this city suddenly became filled with the choleraic poison, suitable subjects were plentifully found on which it might exert its baneful influence. The long continued and excessive heat and drought of the whole season from May till September, the deficient supply of good and wholesome vegetables and meats, and the presence in the water with which the city is supplied of an unusual number of living and putrid animalculæ, were the principal predisposing causes. At the time of the outbreak of cholera, the streets, lanes, and sewers of the city were in a deplorably filthy state, the rivers lower than they had been for many years, navigation entirely suspended, and the labouring population mostly out of employment. Every kind of business appeared to be in a state of suspension or decline, and the citizens were in a state of great anxiety and depression of spirits. Just then, when everything appeared most unfavourable, the cholera commenced its ravages. From the causes above enumerated, the systems of our people became enfeebled, and were thus placed in a proper condition for the reception and development of the choleraic poison.

As to the exciting causes, we have little to say. The attack of cholera was generally so sudden that we were not able, except in very few instances, to trace any exciting cause. Of those in which we could trace an exciting cause, we found that those substances which, in ordinary times, would produce diarrhœa, developed then both cholerine and cholera.

The specific cause of cholera now commands our attention, and, in justice we must confess that we know but little about it. Some, as Dr. Snow and others, contend that, whatever might be its essential nature, this substance is found alone in water which forms the medium of its communication. Our experience in the present epidemic runs counter to Dr. Snow's. As has already been observed, the disease fastened upon the lower parts of the city first, and gradually extended to the hill; left parts comparatively exempt from its ravages, whilst others it attacked with the greatest malignancy; and even in those districts where it prevailed to the greatest extent, it appeared to select certain parts in which its victims were more numerous than in the rest. When we recollect that our citizens are all supplied with water from the same source, we cannot reconcile the above facts with the idea that water was the medium for the diffusion of the choleraic poison. Equally inconsistent are they with the idea that winds scatter this deleterious agent, and thus spread cholera. We cannot say what this agent is; all we know of it is by its effects. We are convinced, however, that it has its existence in the atmosphere—not in any altered proportion of its constituents, but in the addition to it of a material poisonous substance.

An interesting question now arises, Can cholera be propagated by contagion? We were once of opinion that cholera was not contagious, but our recent experience has shaken our former convictions. We are now of opinion that the complaint can be and has been propagated by contagion. It is not, however, a very communicable disease; it becomes so only under certain circumstances. A patient confined with the disease in a small, close room, in which the air is confined, we think can generate an animal poison which may become so concentrated as to produce the disease in some who may be exposed to it. In corroboration of this opinion, we will adduce a few facts which, although negative in their character, are nevertheless almost conclusive on this point.

The origin of cholera in this locality we have briefly stated in the commencement of this report, but the full particulars were not then given. These are as follows:—

Mrs. B——n arrived at the residence of her brother-in-law, Mr. B., in South Pittsburg, which is situated on the bank of the Monongahela, opposite the city, on the 12th of July. On her passage up from New Orleans she had symptoms of cholera, and was laid up for two or three days at New Albany in consequence of these symptoms. On the 14th, just two days after her arrival, she sickened, and died of cholera in six hours. A daughter of Mrs. B., who had been waiting on Mrs. B——n, took the disease on the following day, the 17th, and died also. Mr. B.'s friends, becoming alarmed at his situation, prevailed on him to change his residence to the city the same day of his daughter's death. The next day after his removal, the 18th, his son, aged four years, and an infant, were attacked, the latter of whom recovered. On the 19th, Mrs. B. and another son took the complaint, the former of whom died. It is known, also, that a neighbouring woman, who had visited the house in South Pittsburg during the illness of the family, in two or three days after exposure took cholera and died. After that time, several in the immediate neighbourhood were afflicted with the same disease. In fact, this part appeared to be a nidus from which it spread all along the river as far up as Birmingham, and down as far as Temperanceville, where an occasional case occurred up to the time that it broke out with such malignancy in the city. It must be recollected that, up to the time of the arrival of Mrs. B——n from the South, not one case of cholera had occurred in the city or its environs. She was the first subject attacked, and she evidently brought it with her. From her it spread among the inmates of the house in which she lodged, and from thence to the neighbourhood. A plainer instance of the disease having spread by contagion could not well be adduced.

Another instance of not less striking character may be related. Whilst the cholera was raging in the city, Mr. W. fled from it to a small village on Saw-mill Run, named Shalerville, a distance of about three miles. He, with his family, put up at the house of a friend who lived in a small cabin, in which were lodged several boarders, mostly coal-diggers. The day after his arrival, Mr. W. took sick, and died with the cholera. Within a couple of days, two of the boarders—coal-diggers—likewise were taken with the disease, and died. Neither of these had been in the city for two weeks previous to this event, nor had they been exposed in any way to a choleraic atmosphere previous to the occurrence of the disease in the person of Mr. W.

They had constantly been employed in the coal-pits during this time, among the workmen of which not one case had occurred, nor had there been a case in the village in which they reside. No other attacks were known in the village afterward, as rumour of the complaint prevented the villagers from visiting the house. It seems pretty certain that the disease was contagious in this instance, as the coal-diggers evidently caught it from Mr. W.

During the recent epidemic, it was observed that, when the disease attacked one of the inmates of a large, clean, well-ventilated house, it did not generally spread to the other members of the family; whereas, when it appeared in an inmate of a small, filthy house, situated in some confined court or alley, in which the air must necessarily be confined and impure, more of the family were sure to suffer. It was not an unfrequent event for a whole family thus situated to be taken down with the cholera, the individuals being attacked in succession. The most rational method of accounting for this peculiarity is in the supposition that filth and contagion were concerned in the propagation of cholera. In the case of the former, the poison which we suppose to be generated by the body of the afflicted person was driven away, or so much diluted by the fresh air which was constantly admitted to the room, that it was rendered in a measure innocuous. In the case of the latter, in consequence of the bad ventilation, the choleraic poison was allowed to accumulate in the air of the room in which the patient was confined to such an extent as to produce the cholera in very susceptible persons who might breathe it. It seems, therefore, that the cholera became contagious only where the patient was confined in an imperfectly ventilated room, where the poison could acquire a certain degree of concentration. This poison appears active in proportion to its concentration. In this respect, it resembles the contagious principle of all other contagious diseases. In this explanation, we can very readily perceive the reason why so many of the poor were carried off by this awful plague, while so few of the more favoured classes were taken.

Going a little beyond the present epidemic, we may be permitted to refer to the occurrence of the disease in our western steamboats. Among the cabin passengers, who have the advantage of cleanliness and good ventilation, the cholera seldom occurs; but among the deck passengers, who are crowded together on the lower part of the boat, where the air is much more confined, and where cleanliness is unknown, the disease is quite common. It has been observed, too, that when one case occurs on the lower deck, others are sure to follow with great rapidity. It thus appears the same on steamboats as in the city. Good ventilation and cleanliness check its progress, bad or imperfect ventilation and filth favour its rapid extension.

These considerations lead us to the conclusion that cholera is a contagious disease, though its contagious character is not so evident as some others of that class. Its progress through a city we have no doubt may be considerably retarded by paying great attention to cleanliness and ventilation.

Cholera may likewise be portable, as Dr. Baly believes; but we have nothing in our possession to conclusively demonstrate this fact.

Some physicians have thought that there was a connection between cholera and scurvy—that, in fact, the former was nothing more than the full development of the latter. The committee were unable to trace any connection between them. We did not see a single case of cholera in which scurvy was present, nor one of scurvy in which symptoms of cholera existed. One of the members of this committee, who is Physician to the Western Penitentiary, in his report to the Board of Inspectors, mentions the fact that, immediately on the cessation of cholera in this city, the scurvy broke out in that institution; but not one of those attacked had a symptom of cholera. The report referred to remarks: "If cholera is only a full development of the scorbutic diathesis, as some theorists would have it, here was a fine field for its revels."

Prophylactics.—Although we know of nothing which acts as a perfect prophylactic of cholera, yet we have no doubt that certain precautions, diseases, &c., will, to a certain extent, protect from that awful pestilence. Personal cleanliness, good ventilation, temperate habits, wholesome food, and moderate exercise of the mental and physical systems, will contribute much in preventing an attack of cholera.

It has long been the opinion of many of our physicians that our smoky atmosphere tended to keep off epidemic diseases. When the cholera first visited this country, in 1832, many of our principal cities were severely scourged by it, while Pittsburg was but slightly touched. Again, in 1849 and '50, not more than one hundred and twenty deaths occurred from this disease in the city, while perhaps twice that number happened in its immediate vicinity. These facts seemed to confirm the surmise of the disinfecting nature of our smoke, and made the citizens feel secure from the future attacks of that malady. The scourge of 1854, however, destroyed in part this feeling of security, and apparently exploded our much cherished theory. A little examination of this subject, however, will confirm our preconceived opinions. Cholera has never proved so fatal here as it did in the other great cities of the Union. Even in the present epidemic, which was by far the most severe one we ever had, the mortality, so far as we can learn, was not near so great as in many other of our cities the same year. Thus Pittsburg, out of a population of 60,000, lost 1,000 from cholera, being 1 to every 60 of its citizens.

In consequence of the great quantity of bituminous coal consumed in our city, the atmosphere is almost continually filled with the impalpable powder of carbon and other results of combustion. This carbon we can frequently see, especially before a rain, falling to the earth in the form of flakes. The disinfecting power of our atmosphere we consider to be owing to this carbon, and perhaps to sulphurous acid and other products of combustion with which it abounds. It should, therefore, follow that the disinfecting quality of the atmosphere would be in direct ratio with the amount of these products in it;

and this we find to be exactly the case. During the summer and fall of 1854, much less coal was consumed in this city, both in private dwellings and in manufacturing establishments, than ordinary; and, therefore, the usual amount of carbon and other products of combustion were not thrown into the air. An invasion of cholera at this time, would, of course, be less controlled by these disinfecting agents. This, we believe, is one of the reasons why the disease attacked so many of our citizens. Had the season been a usual one, had our markets been filled with their usual variety of good vegetable productions, had our citizens generally been employed in their usual avocations, and our atmosphere filled with its usual supply of smoke, we hardly think it probable that the cholera could have committed such ravages among us.

As has already been stated, the cholera commenced on the 13th of September. From this day it gradually increased until Monday, the 18th, when it appeared to be near its acme. This day fifty-one persons died of cholera. On the afternoon of this day, bonfires of coal, pitch, pine boards, shavings, &c., were built on nearly all the streets and alleys where cholera was known to prevail, by which means the atmosphere of the city was soon filled with smoke. These fires, probably numbering several hundred, were kept in a state of activity from the 18th to the 20th, inclusive, when, on account of the partial subsidence of the disease, many of them were allowed to become low or entirely die out. The good effects of these fires were apparent on the very following day, as forty-three deaths from cholera only were reported on the 19th, and many of these were from attacks of the previous day. On the 20th, there was a still further reduction in the number of deaths, as we find but twenty-four reported to the Board of Health. The 21st was set apart by the public authorities as a day of fasting, humiliation, and prayer. On this day our large manufacturing establishments ceased operations, and the bonfires were greatly neglected, and many of them allowed to burn out. The same day the cholera renewed its energies, and attacked more than it had done on any previous day, the number of deaths reported being sixty-five. On the approach of evening, the fires were renewed and many new ones built, coal being the material from which they were made, and these were kept constantly burning for more than a week. During this period, the whole city appeared dotted over with large coal fires, giving the appearance at night of an immense military camp, and the amount of smoke floating in our atmosphere was unprecedented. The day after the renewal of the fires the number of deaths was reduced to forty-eight, and many of these occurred in persons who had been attacked the day previous. From this time the disease rapidly declined, as we find in the record only thirty-one deaths for the 23d, twenty-six for the 24th, twenty-five for the 25th, &c.; so that, in three weeks from the first onset of the disease, it was no longer regarded as epidemic among us.

As has already been observed, the record of the Board of Health (from which we have obtained our statistics) does not show the exact number of deaths in this city, and it is unfortunate that it does not; but it is sufficiently accurate to give us the relative proportion of deaths *per diem* during the cholera season. In this respect, it accords entirely with our own individual experience.

The brief relation of the above historical facts shows an exact relation, in an inverse ratio, between the amount of smoke in our atmosphere and the number of deaths from cholera; that, just in proportion as the smoke increased, the cholera diminished, and *vice versa*. The inference fairly deducible from this is, that the products of the combustion of our bituminous coal protect us in part from pestilential cholera.

Our experience during the present epidemic also leads us to regard the occurrence of pustular affections on the skin, and abscesses, to a certain extent, as preventives of cholera. For some time previous to the occurrence of the epidemic, and during its prevalence, we noticed a greater number of these eruptions than we ever recollect of having seen before in the same time, and we cannot remember a single instance in which any of these were attacked with the cholera. Even in cases of lingering cholera, whenever we discovered a cutaneous eruption or abscess of any kind commencing, we always regarded it as a favourable indication, and generally predicted correctly the recovery of the patient. We saw a few cases bearing a very unfavourable aspect, in which very large and painful abscesses commenced on the neck at the base of the ear, and spread over the whole side of the neck as far down as the clavicle, and over the side of the face, and the patients gradually recovered. These facts lead us to the belief that various inflammatory affections of the skin and subcutaneous cellular tissue afford protection from cholera.

Treatment.—In this part of our subject we will be brief. When the cholera first came among us, such was the malignancy of the attacks that nearly all of the first few cases died. In a short time, however, the disease assumed a milder form, when it became, in a great measure, amenable to treatment. At the outset of this branch of our subject, we may remark that we saw or heard of no infallible remedy for the cure of the cholera. All old plans of treatment were tried, besides new ones introduced by our physicians, but in none could implicit confidence be placed. Patients died, no matter what treatment they might have been subjected to.

In the first stage of cholera, especially in the commencement of it, in moderately severe cases, we found sugar of lead and morphia, with or without calomel, a very excellent preparation. In very many cases, it would speedily check the diarrhœa, and prevent the patient from falling into the collapsed condition, from which he was by no means likely to recover. We generally gave it to adults in the proportion of two and a half or three grains of sugar of lead, to one-sixteenth or one-eighth of a grain of sulphate of morphia, dissolved in a teaspoonful of cinnamon-water. This dose we gave every fifteen minutes or half an hour, or less frequently, according to the greater or less urgency of the case. Should he vomit up a dose, it was repeated immediately, when it would generally remain. In connection with this remedy, the patient was strictly enjoined to remain perfectly quiet in a horizontal posture, and use the bed-pan for the reception of his evacuations, when it could be procured. This precaution it was necessary to insist upon most strongly, as it was in most cases absolutely necessary for the recovery of the patient. Indeed, we saw many cases which had a fatal termination, or at least a severe relapse, in persons who did not altogether comply with this injunction after they had commenced to improve. The patient was generally covered up warmly in bed, hot bricks applied to his feet, a large mustard cataplasm placed over his abdomen, and sometimes to his back, and drinks strictly prohibited. In lieu of drinks, he was allowed to suck ice, which generally proved very refreshing. An occasional injection of twenty grains of sugar of lead, or ten grains of tannic acid, in one or two tablespoonfuls of thin starch-water, was administered, and directions to retain it, if possible, and suppress an evacuation from his bowels if possible. Light cases, subjected to this treatment in the earlier stages of the disease, generally had a favourable termination. The diarrhœa was soon checked, and neither cramps nor collapse supervened. Recovery, considering the violence of the malady, was mostly rapid and complete.

There were many cases, however, and these were mostly those of a severer type, in which this treatment—at least the internal employment of sugar of lead, and opium or morphia—had not the slightest effect. These cases generally proved fatal, unless arrested by some other treatment. After trying many remedies and modes of treatment in these unyielding and severe cases, the plan which succeeded best in our hands we shall now briefly relate. The patient was placed in bed, and *perfect* rest in a horizontal posture strictly required. Pillow-cases or small bags filled with hot oats were placed around the body, a large mustard plaster applied over the abdomen, and an injection of ten or fifteen grains of tannic acid, in a little thin starch-water was given, if possible, after every copious discharge from the bowels, which the patient was requested to retain as long as possible. Drinks of every kind, in cases attended with much gastric irritability, were forbidden, though free indulgence in the luxury of sucking ice was allowed. As an internal remedy, we employed strychnia and spirit of turpentine. Our usual prescription, varied by the age of the patient and other circumstances, was as follows: ℞. Strychnia sulph. gr. ¼ vel ½; spir. terebinth. ʒj; mucilag. acaciæ ℥iv. M. One teaspoonful of this was ordered every fifteen minutes, until a marked improvement in the symptoms was observed, when the interval was lengthened to twenty minutes or half an hour. As the case continued to improve, the dose was given not more frequently than once an hour, or once in two or three hours, according to its effects on the symptoms, and continued as long as any active symptom of cholera beyond mere prostration was observed. Where the patient appeared to be sinking rapidly, we sometimes removed the warm applications which were around his body, and had him rubbed very severely all over with coarse flannel cloths dipped in dry mustard; afterwards renewing the hot applications. When there was no vomiting or irritability of the stomach, we ordered, if there was danger of rapidly sinking into collapse, one tablespoonful or more of the best French brandy to be given every half hour, and a tablespoonful of beef essence every hour, or less frequently, if the symptoms were less threatening.

Under this treatment, patients frequently recovered from the most malignant attacks of cholera, many of whom unquestionably would have succumbed under any other mode of treatment we saw tried. We therefore unhesitatingly give it the preference to all others. We must here acknowledge that we did not cure every case by the plan proposed, as there were some which went on to a fatal termination, notwithstanding our treatment. Some physicians of this city, and a few, indeed, at our suggestion, tried the strychnia treatment, but were not so happy in its employment as we profess to have been. This, we think—in fact, we know—was owing to their not following it up with the same promptness that we did, or with the same determination. Either larger doses were given at more distant intervals, or the prescription changed for something else before it had time to produce its specific effects. The fatal effects which mostly followed in either of these events were not fairly chargeable to the inefficiency of the strychnia. That this remedy may prove beneficial, it is absolutely necessary that it be given in small doses at short intervals, and followed up strictly by the other directions already pointed out. Without perfect rest in a lying posture, and the use of the other adjuncts alluded to, as ice, mustard plasters, fresh air, &c., we could not reasonably look for the recovery of the patient, no matter what internal preparations might be given him.

We do not claim the formula employed as original with us; it was first published, we think, two or three years ago, in the *Transactions of the Medical Society of Ohio*, from which we obtained it; but the other means we employed were derived from other sources, and were such as our common sense and individual experience led us to adopt. We claim, however, to have been eminently successful, and can conscientiously recommend the treatment we employed to our medical brethren for a trial.

In the mild variety of the disease, where nearly, or perhaps the only symptom present was the peculiar diarrhœa, the tincture of kino, with some preparation of opium, given every hour or so, frequently cut short the complaint and established convalescence. Tincture of kino was sometimes given in combination with brandy with advantage.

Some of our physicians had more confidence in Cartright's preparation of capsicum, camphor, pulverized carbon, mercury with chalk and gum Arabic, than in any other. One of our principal physicians informed us that he carried some of this powder about him during the whole cholera season, and used it in many cases of cholera with great advantage.

The ultra opium treatment, we believe, was generally discarded, it having been tried here ineffectually in 1849.

The calomel treatment was partially tried in one of our hospitals, and, it is said, with considerable success. We cannot, however, speak of it from experience.

The sulphuric acid, in large doses, was also employed, and, in the hands of some, with success. We gave it in two cases, but, both the patients dying, we lost confidence in it.

The administration of heroic doses of sulphate of quinia was also resorted to, but not with the success anticipated. Two cases in which we used it died.

It sometimes happened that, in consequence of the vomiting, the medicine given internally would not be retained. When this occurred, the application of Granville's liniment to the epigastrium for a few minutes would frequently allay the irritability of the stomach, so that medicines could be retained. Sometimes it was necessary to remove the skin from the vesicated part, and sprinkle upon the abraded surface one grain of sulphate of morphia. By this application the vomiting would often be checked.

From the collapsed stage very few recovered. The most of those who died were in the collapsed stage before any medical assistance was called to them, and many of them were really moribund. The treatment employed in this was various. Cartright's preparation, calomel, charcoal, sulphuric acid, sulphate of quinia, brandy, carbonate of ammonia, sulphuric ether, strychnia, and a host of other astringents, antiseptics, stimulants, and tonics, were employed with varying success. For our part, we derived more advantage from the strychnia, in connection with brandy or carbonate of ammonia, frictions and hot applications to the external surface of the body, than from any other remedies.

When reaction had become fully established, if no complication supervened, the patient generally recovered in a few days by keeping quiet and taking care not to eat indigestible or improper articles of diet. Some gentle tonic hastened the return to health.

The variety of fever which sometimes followed this reactive stage was treated on general principles. The remedies employed depended upon its violence and peculiarities.

In case the brain or its membranes suffered from inflammatory symptoms, the remedies employed were such as are generally had recourse to when these symptoms are noticed in the progress of any other complaint. Purging, however, in a great measure, was avoided. Leeching the temples or cupping behind the ears, and repeating these as often as the case required; applying ice or other refrigerating applications to the head; bathing the lower extremities in water strongly impregnated with salt, mustard, or other stimulants; keeping the head elevated; and administering an occasional stimulating injection, were the chief means of cure. In some cases, blistering behind the ears, or on the back of the neck, contributed to the recovery of the patient. By the use of these means, a favourable termination was generally obtained.

Another complication which frequently harassed the patient was an inflammatory condition of the stomach, and sometimes of the intestines, in which case the continued uneasiness in the epigastrium and vomiting prevented the medicines and food from lying on the stomach, and occasionally placed his life in jeopardy. When this condition was present, the application of a few leeches, repeated several times if necessary, to the epigastrium, or, what we preferred, the use of Granville's lotion, and morphia applied in the manner pointed out when speaking of the treatment of the first stage of cholera, was generally found to afford prompt and complete relief. Common poultices to this part were also used with great advantage. Great care was taken in the diet. Small quantities of gum-water alone were given at first for food and drink; but, as the case improved, a more substantial diet was allowed.

We need not speak of any other of the complications occurring in the reactive stage of cholera, as they were but few in comparison with those already given. The brain and its appendages, and the stomach and its prolongations, were unquestionably the organs which suffered most in convalescence from cholera.

With regard to the relative mortality of cholera in private practice, or under different systems of treatment, we could obtain no reliable information beyond our own experience. We are persuaded, however, that by far the greater number of those attacked recovered. In hospital practice, the mortality was unquestionably greater than in private; but this no doubt arose from the difference in the kind of patients, and the period of the disease at which treatment was commenced, many of those received into hospitals being moribund on admission.

We deem it proper to state here that this report thus far was written by the chairman of the committee, and he alone is responsible for the statements and opinions contained therein.

Since the above was written, we have received from one of the members of the committee, who is one of the physicians to Mercy Hospital, the following note relative to the admissions, treatment, and comparative mortality of cholera cases in that hospital:—

> "Admitted to Mercy Hospital from September 14th to 30th, 72 cases of cholera; 38 died and 34 recovered. Of those that died, 30 were admitted in a dying condition; many of them I never saw, as they were admitted and died between my morning and evening visit. They were treated with quinia, calomel, capsicum, and opium, in combination, which was usually retained by the stomach when given in moistened sugar. If rejected, the same was given in pill, only substituting ol. piperis nig. for the pulv. capsici. Sulphuric acid and strychnia were used in a few cases, but with no beneficial result. However, these medicines were not resorted to in cases where there was a probability of success with other remedies."

In bringing our article to a close, we will briefly sum up some of the conclusions arrived at:—

1st. The cholera, on its first outbreak, was more virulent in its attacks, and more likely to prove fatal, than it was after it had existed among us a short time.

2d. Its specific cause is believed to have been the existence in the atmosphere of some material substance, the nature of which we do not fully understand.

3d. We believe cholera, under certain circumstances, to be a contagious disease. Ordinarily, it did not prove itself such; but, when it existed in places where ventilation could not be had, its contagious character was then more fully shown.

4th. The smoke formed by the combustion of our bituminous coal afforded us partial protection from the ravages of cholera.

5th. The occurrence of various cutaneous pustular eruptions and abscesses appeared to give protection from cholera.

6th. Persons of foreign birth, the aged, feeble, and intemperate, suffered more severely from cholera than any other class of our citizens.

PITTSBURG, *July* 3, 1855.

We append to this report an account of the weather during the cholera period, as well as a tabular statement of meteorological observations taken during a period of two years, commencing April 1, 1853, by our fellow-townsman, W. W. Wilson, Esq., who has politely furnished us with them. Table II. is of our own construction from the material supplied by him. The great heat and drought which prevailed during the months of June, July, and August of 1854, can readily be seen at a glance.

TABLE I.

Observations on the Weather taken during the Cholera periods, September, 1854.

1854.—	Sept.	14.	Morning cloudy; evening, 6 o'clock, heavy clouds, lightning in N. W., wind from S. W. From 6½ to 8 o'clock, heavy rain, with vivid lightning. Amount of rain, .720 in.
"	"	15.	A. M., sun very warm in the morning.
"	"	16.	Clear.
"	"	17.	"
"	"	18.	"
"	"	19.	A. M., cloudy, wind from N. W.; P. M., cloudy. From 5½ o'clock it rained three hours. Amount of rain, .520. Wind from S. W.
"	"	20.	Clear.
"	"	21.	"
"	"	22.	"
"	"	23.	"
"	"	24.	"
"	"	25.	"
"	"	26.	"
"	"	27.	"

TABLE II.

	Quantity of rain.	Mean height of barometer.	Mean temperature.		Quantity of rain.	Mean height of barometer.	Mean temperature.
1853.	Inches.	Inches.	Degrees.	1854.	Inches.	Inches.	Degrees.
April	3.640	28.89	48	April	3.590	28.93	47
May	4.297	29.02	61	May	2.320	28.96	60
June	1.853	29.22	73	June	.700	29.01	73
July	3.428	29.08	70	July	.723	29.12	79
Aug.	7.747	29.10	71	Aug.	.630	29.08	77
Sept.	2.411	29.06	63	Sept.	1.915	29.11	72
Oct.	2.048	29.14	48	Oct.	2.267	29.10	56
Nov.	3.320	29.12	44	Nov.	1.595	28.86	36
Dec.	1.575	29.00	28	Dec.	1.680	29.00	28
1854.				1855.			
Jan.	2.626	28.99	14	Jan.	.820	29.01	26
Feb.	2.875	29.00	34	Feb.	1.640	29.86	20
March	2.343	28.91	39	March	3.300	28.97	33
Means	3.180	29.04	49.4	Means	1.765	29.08	51.4

In the first twelve months of the above table, there were 83 days on which rain fell, whilst in the latter twelve there were but 57.

ART. IV.—*Statistics of two hundred and fifty-eight Cases of Intestinal Obstruction, with Remarks.* By S. FOSTER HAVEN, Jr., M. D.

THERE are some disorders of whose history we know very little, although their results are readily anticipated, and their medical management has been regarded as simple. It is to this class that cases of intestinal obstruction belong. Yet, in these cases, a correct diagnosis is the first and most indispensable requisite. When the state of facts has been ascertained, the treatment is usually matter of little doubt. Diagnosis, however, as a system, cannot be said to possess a reliable value, unless it rests upon a sufficient number of well-authenticated facts; and to the numerical system, chiefly, must we look for such an accumulation of phenomena as will constitute a solid basis for intelligent treatment. We will, therefore, offer no further apology for presenting the following pages—mostly a collection of statistical tables—believing that whatever tends to reduce a mass of isolated facts within the range of immediate observation cannot be altogether useless.

Where an individual has an opportunity to make his own records from a large number of cases of the same disease—as Louis has done—it is possible to produce a unique and complete history of that disease. But where, as in the disorder of which we propose to speak, a practitioner meets with comparatively few cases in a lifetime, such a result can be only approximately